WHAT IS CLAIMED IS:

1. A data storage system comprising:

a storage medium;

a head;

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times;

a calculation circuit adapted to provide a signal representing a distance between the head and the storage medium based on a function of the first and second amplitudes; and

a head controller adapted to control the distance between the head and the storage medium based on the signal provided by the calculation circuit.

2. The data storage system of claim 1:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

3. The data storage system of claim 1:

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of the second amplitudes.

4. The data storage system of claim 1:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of the second amplitudes.

5. The data storage system of claim 1:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

6. The data storage system of claim 1:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

7. The data storage system of claim 1:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where $n > 1$;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

8. The data storage system of claim 1:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where $n > 1$;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

9. An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes.

10. The apparatus of claim 9:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

11. The apparatus of claim 9:

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of the second amplitudes.

12. The apparatus of claim 9:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of the second amplitudes.

13. The apparatus of claim 9:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

14. The apparatus of claim 9:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

15. The apparatus of claim 9:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where $n > 1$;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

16. The apparatus of claim 9:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where $n > 1$;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

17. An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

a measurement circuit

adapted to receive a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

adapted to determine a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

a calculation circuit adapted to provide a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes.

18. The integrated circuit of claim 17:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

19. The integrated circuit of claim 17:

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of the second amplitudes.

20. The integrated circuit of claim 17:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of the second amplitudes.

21. The integrated circuit of claim 17:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

22. The integrated circuit of claim 17:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

23. The integrated circuit of claim 17:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where $n > 1$;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

24. The integrated circuit of claim 17:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where $n > 1$;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

25. A data storage system comprising:

storage medium means for storing data;

head means for reading the data from the storage medium means;

pulse circuit means for generating a pulse in response to a transition of the head means over a predetermined pattern on the storage medium means;

measurement circuit determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times;

calculation circuit means for providing a signal representing a distance between the head means and the storage medium means based on a function of the first and second amplitudes; and

head controller means for controlling the distance between the head means and the storage medium means based on the signal provided by the calculation circuit means.

26. The data storage system of claim 25:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

27. The data storage system of claim 25:

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of the second amplitudes.

28. The data storage system of claim 25:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of the second amplitudes.

29. The data storage system of claim 25:

wherein a plurality of symbols of the data are stored on the storage medium means;

wherein the measurement circuit means takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse, and wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

30. The data storage system of claim 25:

wherein a plurality of symbols of the data are stored on the storage medium means;

wherein the measurement circuit means takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse, and wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

31. The data storage system of claim 25:

wherein a plurality of symbols of the data are stored on the storage medium means;

wherein the measurement circuit means takes samples of the pulse at n times the baud rate of the symbols of the data, where n > 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse, and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

32. The data storage system of claim 25:

wherein a plurality of symbols of the data are stored on the storage medium means;

wherein the measurement circuit means takes samples of the pulse at n times the baud rate of the symbols of the data, where n > 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

33. An apparatus for determining a distance between a head and a storage medium, the apparatus comprising:

pulse circuit means for generating a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

measurement circuit means for determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes.

34. The apparatus of claim 33:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

35. The apparatus of claim 33:

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of the second amplitudes.

36. The apparatus of claim 33:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of the second amplitudes.

37. The apparatus of claim 33:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit means takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

38. The apparatus of claim 33:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit means takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

39. The apparatus of claim 33:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where $n > 1$;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

40. The apparatus of claim 33:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where $n > 1$;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

41. An integrated circuit for determining a distance between a head and a storage medium, the integrated circuit comprising:

measurement circuit means for

receiving a pulse from the head in response to a transition of the head over a predetermined pattern on the storage medium, and

determining a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculation circuit means for providing a signal representing the distance between the head and the storage medium based on a function of the first and second amplitudes.

42. The integrated circuit of claim 41:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

43. The integrated circuit of claim 41:

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of the second amplitudes.

44. The integrated circuit of claim 41:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of the second amplitudes.

45. The integrated circuit of claim 41:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit means takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

46. The integrated circuit of claim 41:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

47. The integrated circuit of claim 41:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where n > 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

48. The integrated circuit of claim 41:

wherein a plurality of symbols of data are stored on the storage medium;

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where n > 1;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

49. A method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes.

50. The method of claim 49:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

51. The method of claim 49:

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of the second amplitudes.

52. The method of claim 49:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of the second amplitudes.

53. The method of claim 49, wherein a plurality of symbols of data are stored on the storage medium, further comprising:

taking samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

54. The method of claim 49, wherein a plurality of symbols of data are stored on the storage medium, further comprising:

taking samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

55. The method of claim 49, wherein a plurality of symbols of data are stored on the storage medium, further comprising

taking samples of the pulse at n times the baud rate of the symbols of the data, where $n > 1$;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

56. The method of claim 49, wherein a plurality of symbols of data are stored on the storage medium, further comprising

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where $n > 1$;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

57. The method of claim 49, further comprising:

controlling the distance between the head and the storage medium based on the calculated distance between the head and the storage medium.

58. The method of claim 49, further comprising:

generating the pulse in response to a transition of a head over a predetermined pattern on a storage medium.

59. A computer program embodying instructions executable by a computer to perform a method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of the pulse at a first predetermined time and one or more second amplitudes of the pulse at respective second predetermined times; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes.

60. The computer program of claim 59:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

61. The computer program of claim 59:

wherein the function of the first and second amplitudes is a ratio of the first amplitude to a sum of the second amplitudes.

62. The computer program of claim 59:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first amplitude to a sum of the second amplitudes.

63. The computer program of claim 59, wherein a plurality of symbols of data are stored on the storage medium, and wherein the method further comprises:

taking samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

64. The computer program of claim 59, wherein a plurality of symbols of data are stored on the storage medium, and wherein the method further comprises:

taking samples of the pulse at a baud rate of the symbols of the data;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

an immediately previous amplitude determined from the one of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

an immediately succeeding amplitude determined from the one of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

65. The computer program of claim 59, wherein a plurality of symbols of data are stored on the storage medium, and wherein the method further comprises:

taking samples of the pulse at n times the baud rate of the symbols of the data, where $n > 1$;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples succeeding the one of the samples nearest the maximum amplitude of the pulse.

66. The computer program of claim 59, wherein a plurality of symbols of data are stored on the storage medium, and wherein the method further comprises:

wherein the measurement circuit takes samples of the pulse at n times the baud rate of the symbols of the data, where $n > 1$;

wherein the first amplitude is determined from the one of the samples nearest a maximum amplitude of the pulse; and

wherein the second amplitudes comprise

a previous amplitude determined from the one of the samples immediately preceding the n - 1 of the samples immediately preceding the one of the samples nearest the maximum amplitude of the pulse, and

a succeeding amplitude determined from the one of the samples immediately succeeding the n - 1 of the samples immediately succeeding the one of the samples nearest the maximum amplitude of the pulse.

67. The computer program of claim 59, wherein the method further comprises:

controlling the distance between the head and the storage medium based on the calculated distance between the head and the storage medium.

68. The computer program of claim 59, wherein the method further comprises:

generating the pulse in response to a transition of a head over a predetermined pattern on a storage medium.

69. A data storage system comprising:

a storage medium;

a head;

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of a power spectrum of the pulse at a first predetermined frequency and a second amplitude of the power spectrum of the pulse at respective second predetermined frequencies; and

a calculation circuit adapted to provide a signal representing a distance between the head and the storage medium based on a function of the first and second amplitudes; and

a head controller adapted to control the distance between the head and the storage medium based on the signal provided by the calculation circuit.

70. The data storage system of claim 69:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

71. The data storage system of claim 69:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first and second amplitudes.

72. The data storage system of claim 69:

wherein a sequence of symbols of data having first and third harmonics is stored on the storage medium;

wherein the first amplitude is determined at the first harmonic of the power spectrum of the pulse; and

wherein the second amplitude is determined at the third harmonic of the power spectrum of the pulse.

73. An apparatus for controlling a head in a data storage system comprising a storage medium, the apparatus comprising:

a pulse circuit adapted to generate a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

a measurement circuit adapted to determine a first amplitude of a power spectrum of the pulse at a first predetermined frequency and a second amplitude of the power spectrum of the pulse at respective second predetermined frequencies; and

a calculation circuit adapted to provide a signal representing a distance between the head and the storage medium based on a function of the first and second amplitudes.

74. The apparatus of claim 73:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

75. The apparatus of claim 73:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first and second amplitudes.

76. The apparatus of claim 73:

wherein a sequence of symbols of data having first and third harmonics is stored on the storage medium;

wherein the first amplitude is determined at the first harmonic of the power spectrum of the pulse; and

wherein the second amplitude is determined at the third harmonic of the power spectrum of the pulse.

77. An integrated circuit for controlling a head in a data storage system comprising a storage medium, the integrated circuit comprising:

a measurement circuit

adapted to receive a pulse in response to a transition of the head over a predetermined pattern on the storage medium, and

adapted to determine a first amplitude of a power spectrum of the pulse at a first predetermined frequency and a second amplitude of the power spectrum of the pulse at respective second predetermined frequencies; and

a calculation circuit adapted to provide a signal representing a distance between the head and the storage medium based on a function of the first and second amplitudes.

78. The integrated circuit of claim 77:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

79. The integrated circuit of claim 77:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first and second amplitudes.

80. The integrated circuit of claim 77:

wherein a sequence of symbols of data having first and third harmonics is stored on the storage medium;

wherein the first amplitude is determined at the first harmonic of the power spectrum of the pulse; and

wherein the second amplitude is determined at the third harmonic of the power spectrum of the pulse.

81. A data storage system comprising:

storage medium means for storing data;

head means for reading the data from the storage medium means;

pulse circuit means for generating a pulse in response to a transition of the head means over a predetermined pattern on the storage medium means;

measurement circuit means for determining a first amplitude of a power spectrum of the pulse at a first predetermined frequency and a second amplitude of the power spectrum of the pulse at respective second predetermined frequencies; and

calculation circuit means for providing a signal representing a distance between the head means and the storage medium means based on a function of the first and second amplitudes; and

head controller means for controlling the distance between the head means and the storage medium means based on the signal provided by the calculation circuit means.

82. The data storage system of claim 81:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

83. The data storage system of claim 81:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first and second amplitudes.

84. The data storage system of claim 81:

wherein a sequence of symbols of data having first and third harmonics is stored on the storage medium means;

wherein the first amplitude is determined at the first harmonic of the power spectrum of the pulse; and

wherein the second amplitude is determined at the third harmonic of the power spectrum of the pulse.

85. An apparatus for controlling a head in a data storage system comprising a storage medium, the apparatus comprising:

pulse circuit means for generating a pulse in response to a transition of the head over a predetermined pattern on the storage medium;

measurement circuit means for determining a first amplitude of a power spectrum of the pulse at a first predetermined frequency and a second amplitude of the power spectrum of the pulse at respective second predetermined frequencies; and

calculation circuit means for providing a signal representing a distance between the head and the storage medium based on a function of the first and second amplitudes.

86. The apparatus of claim 85:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

87. The apparatus of claim 85:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first and second amplitudes.

88. The apparatus of claim 85:

wherein a sequence of symbols of data having first and third harmonics is stored on the storage medium;

wherein the first amplitude is determined at the first harmonic of the power spectrum of the pulse; and

wherein the second amplitude is determined at the third harmonic of the power spectrum of the pulse.

89. An integrated circuit for controlling a head in a data storage system comprising a storage medium, the integrated circuit comprising:

measurement circuit means for

receiving a pulse in response to a transition of the head over a predetermined pattern on the storage medium, and

determining a first amplitude of a power spectrum of the pulse at a first predetermined frequency and a second amplitude of the power spectrum of the pulse at respective second predetermined frequencies; and

calculation circuit means for providing a signal representing a distance between the head and the storage medium based on a function of the first and second amplitudes.

90. The integrated circuit of claim 89:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

91. The integrated circuit of claim 89:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first and second amplitudes.

92. The integrated circuit of claim 89:

wherein a sequence of symbols of data having first and third harmonics is stored on the storage medium means;

wherein the first amplitude is determined at the first harmonic of the power spectrum of the pulse; and

wherein the second amplitude is determined at the third harmonic of the power spectrum of the pulse.

93. A method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of a power spectrum of the pulse at a first predetermined frequency and a second amplitude of the power spectrum of the pulse at respective second predetermined frequencies; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes.

94. The method of claim 93:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

95. The method of claim 93:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first and second amplitudes.

96. The method of claim 93:

wherein a sequence of symbols of data having first and third harmonics is stored on the storage medium;

wherein the first amplitude is determined at the first harmonic of the power spectrum of the pulse; and

wherein the second amplitude is determined at the third harmonic of the power spectrum of the pulse.

97. The method of claim 93, further comprising:

controlling a distance between the head and the storage medium based on the distance between the head and the storage medium determined by the calculation circuit.

98. The method of claim 93, further comprising:

generating the pulse in response to a transition of a head over a predetermined pattern on a storage medium.

99. A computer program embodying instructions executable by a computer to perform a method comprising:

receiving a pulse generated in response to a transition of a head over a predetermined pattern on a storage medium;

measuring a first amplitude of a power spectrum of the pulse at a first predetermined frequency and a second amplitude of the power spectrum of the pulse at respective second predetermined frequencies; and

calculating a distance between the head and the storage medium based on a function of the first and second amplitudes; and

100. The computer program of claim 99:

wherein the function of the first and second amplitudes is a ratio of the first and second amplitudes.

101. The computer program of claim 99:

wherein the function of the first and second amplitudes is a logarithm of a ratio of the first and second amplitudes.

102. The computer program of claim 99:

wherein a sequence of symbols of data having first and third harmonics is stored on the storage medium;

wherein the first amplitude is determined at the first harmonic of the power spectrum of the pulse; and

wherein the second amplitude is determined at the third harmonic of the power spectrum of the pulse.

103. The computer program of claim 99, wherein the method further comprises:

controlling a distance between the head and the storage medium based on the distance between the head and the storage medium determined by the calculation circuit.

104. The computer program of claim 99, wherein the method further comprises:

generating the pulse in response to a transition of a head over a predetermined pattern on a storage medium.